UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/454,758	12/06/1999	PER JOHANSSON	040000-625	4205

21839 7590 04/09/2003

BURNS DOANE SWECKER & MATHIS L L P
POST OFFICE BOX 1404
ALEXANDRIA, VA 22313-1404

EXAMINER	
NGUYEN, HANH N	

ART UNIT	PAPER NUMBER
2662	7

DATE MAILED: 04/09/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/454,758	JOHANSSON, PER	
	Examiner	Art Unit	
	Hanh Nguyen	2662	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *Application filed on 12/06/99* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4 and 6-10* is/are rejected.

7)☒ Claim(s) *5 and 11* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *3,5&6* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Specification

The disclosure is objected to because of the following informalities: the application serial numbers on page 1, lines 6, 7, 9 and 11 are not filled out in the blank spaces. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 6, 7, 8 are rejected under 35 USC 103(a) as being unpatentable over **Robinson et al.** (US Pat. No. 6,122,291) in view of **Anvekar et al.** (US Pat. No. 6,377,805 B1).

In claim 1, **Robinson et al.** discloses, in Fig.3, a master device 44 (a first terminal) receives a bandwidth request from a slave device 30 (a second terminal) (a first terminal receives a request from a second terminal). The bandwidth request negotiates master device 44 to adjust its capability (modifying the capacity allocation of the first terminal). See col.5, lines 1-10 & lines 23-30. The master device 44 estimates an instantaneous frequency availability for the system (determining if sufficient available capacity to accommodate the request), and compares capability of master device 44 (capacity allocation of the first terminal) with the preferred bandwidth of slave device 30 (capacity of the second terminal) in order to obtain allowable

bandwidth (determining capacity to satisfy the request). See col.5, lines 4-11. **Robinson et al.** does not disclose an ad-hoc network in which terminals belong to more than one piconet.

Anvekar et al. discloses, in Fig. 3, a slave node 205 requests a handoff during moving from a cell 1 (a first piconet) to a cell 2 (a second piconet). Slave node 205 requests a master node 204 of cell 2 for an available channel (request for bandwidth). See col.3, line 65 to col.4, lines 7.

Therefore, it would have been obvious to one of ordinary skills in the art to use the master and slave devices of **Robinson et al.** in the **Anvekar et al.** , each in a different cell, to negotiate bandwidth modification in ad-hoc network because the **Anvekar et al.** refers to an ad-hoc network comprising multiple cells (piconets), wherein each cell comprises a master device and slave devices respectively. The motivation is to fluctuate bandwidth transmissions associated with demanded data between terminals.

In claim 6, **Robinson et al.** discloses, in Fig.5, at step 106, the master device 44 (the first terminal) adjusts its operating parameters (modifying capacity) in response to the request (modifying the first terminal 's capacity to accommodate the request). See col.7, lines 1-5.

In claim 7, **Robinson et al.** discloses, in Fig.3, the master 44 (the first terminal) informs the slave device 30 (second terminal) a control message (a data message) indicating the allowable bandwidth . See col.5, lines 10-14.

In claim 8, **Robinson et al.** discloses, in Fig.3, when a slave device (a third terminal) wants to alter its requested bandwidth, the master device 44 sends a control sequence (a data message) defining bandwidth to be used (the first terminal transmits to a third terminal a

message including information representative of the first terminal 's modified capacity). See col.6, lines 20-25.

Claims 9 and 10 are rejected under 35 USC 103(a) as being unpatentable over **Robinson et al.** (US Pat. No. 6,122,291) in view of **Anvekar et al.** (US Pat. No. 6,377,805 B1), and further in view of **Scheurich** (US Pat. No. 5,848,266).

In claim 9, **Robinson et al.** discloses, in Fig.3, a master device 44 (a first terminal/a Bluetooth unit) receives a bandwidth request from a slave device 30 (a second terminal/a Bluetooth unit) (a first terminal receives a request from a second terminal). The bandwidth request negotiates master device 44 to adjust its capability (modifying the capacity allocation of the first terminal). See col.5, lines 1-10 & lines 23-30. The master device 44 estimates an instantaneous frequency availability for the system (determining if sufficient available capacity to accommodate the request), and compares capability of master device 44 (capacity allocation of the first terminal) with the preferred bandwidth of slave device 30 (capacity of the second terminal) in order to obtain allowable bandwidth (determining capacity to satisfy the request). See col.5, lines 4-11. **Robinson et al.** does not disclose an ad-hoc network in which terminals belong to more than one piconet, and the request including a digital representation of the second terminal 's capacity allocation.

Anvekar et al. discloses, in Fig. 3, a slave node 205 requests a handoff during moving from a cell 1 (a first piconet) to a cell 2 (a second piconet). Slave node 205 requests a master node 204 of cell 2 for an available channel (request for bandwidth). See col.3, line 65 to col.4, lines 7. **Scheurich** discloses, in Fig.1, a request for bandwidth from an agent (a second

terminal) comprising a digital presentation (request including a digital representation of the second terminal 's capacity allocation). See col.3, lines 27-30.

Therefore, it would have been obvious to one of ordinary skills in the art to use the master and slave devices of **Robinson et al.** in the **Anvekar et al.** , each in a different cell, to negotiate bandwidth modification in ad-hoc network because the **Anvekar et al.** refers to an ad-hoc network comprising multiple cells (piconets), wherein each cell comprises a master device and slave devices respectively. The motivation is to fluctuate bandwidth transmissions associated with demanded data between terminals.

In claim 10, **Robinson et al.** discloses, in Fig.3, a communication circuitry 48 (a communication module) receives information signal 36 from slave device 30 (a second terminal). See col.3, line 65 to col.4, line 2. The information signal 36 represents a request for a preferred bandwidth. (a communication module receives a request). See col.5, lines 1-4. The master device 44 (the first terminal) has a memory 52 that stores information relating to the preferred bandwidth requested by slave device 30 (the first terminal 's capacity allocation is stored in a memory module). See col.4, lines 2-8. A processor 50 (a processor module) of master device 44 is coupled to the memory 52 (associated with memory module) (See col.4, lines 1-5) in order to service requested bandwidth from slave device 30 such as compare capability of master device 44 (capacity allocation of the first terminal) with the preferred bandwidth of slave device 30 (capacity of the second terminal) in order to obtain allowable bandwidth (determining capacity to satisfy the request). See col.5, lines 4-11. **Robinson et al.** does not disclose the request sent from second terminal comprises a digital representation; and the first terminal 's capacity allocation comprises a digital representation.

Scheurich discloses, in Fig.1, step 105, a request for bandwidth from an agent (a second terminal) comprising a digital presentation (request including a digital representation of the second terminal 's capacity allocation). See col.3, lines 27-30. At step 120, a sufficient bandwidth is determined, and the requested digital representation is adjusted (the first terminal 's capacity allocation comprises a digital representation). See col.3, lines 55-58.

Since the **Scheurich** refers to a bandwidth request to adjust digital representation, therefore; it would have been obvious to one of ordinary skills in the art to modify the **Robinson et al.** by comprising digital representations into the requested bandwidth as well as the available bandwidth allocation so as to indicate the number of free time slots for the requestor by using binary number.

Claims 2, 3 and 4 are rejected under 35 USC 103(a) as being unpatentable over **Robinson et al.** (US Pat. No. 6,122,291) in view of **Anvekar et al.** (US Pat. No. 6,377,805 B1), and further in view of **Szabo** (US Pat. No. 5,592,469).

In claim 2, **Robinson et al.** discloses, in Fig.3, that the request for bandwidth from the slave terminal 30 (request from the second terminal) comprises a minimum/maximum bandwidth limits via a control message (represent a priority class of a desired capacity allocation). See col.5, lines 1-4 & line 65 to col.6, line 2. (Note: according the specification, page 21, lines 20-28, the claimed "the priority class" is described as a "best effort" level. Therefore, examiner considers the "priority class of the desired capacity" as the "minimum/maximum bandwidth" requested by the subscriber). **Robinson et al.** does not disclose the capacity allocated by the first terminal to priority classes lower than the priority class parameter in the request from the second terminal.

Szabo discloses the base station can provide smaller transmission capacity (lower priority class) than the requested capacity (requested priority class), given a minimum quality is specified (priority class lower than the priority class parameter in the request from the second terminal). See col.9, lines 20-25.

Therefore, it would have been obvious to one of ordinary skills in the art to modify the **Robinson et al.** by adding the feature of allocating smaller capacity of **Szabo** into the **Robinson** so that the first terminal can allocate its capacity to the second terminal below the requested maximum capacity limit, with a minimum capacity given. The reason is that, in the **Robinson et al.** , the master device 44 maximises its information transfer (capacity) to the slave device 30 by setting its minimum/maximum limits to correspond to a maximum information capacity requested by the slave device (requested capacity). (See Robinson , col.5, line 65 to col.6, line 2). The motivation of the combination is to fluctuate transmission rates (capacity) allocation to the second terminal in different demands; and to maintain quality of service of the transmission capacity in an acceptable range.

In claim 3, **Robinson et al.** discloses, in Fig.3, that the request for bandwidth from the slave terminal 30 (request from the second terminal) comprises a minimum/maximum bandwidth limits via a control message (represent a priority class of a desired capacity allocation). See col.5, lines 1-4 & line 65 to col.6, line 2. (Note: according the specification, page 21, lines 20-28, the claimed "the priority class" is described as a "best effort" level. Therefore, examiner considers the "priority class of the desired capacity" as the "minimum/maximum bandwidth" requested by the subscriber). In addition, the master device 44 (the first terminal) maximises its information transmission (capacity) to the slave device 30 by setting its minimum/maximum limits (first

terminal 's priority class) to correspond to (equal to) a maximum information capacity requested (second terminal 's priority class) by the slave device (requested capacity) (capacity allocated by the first terminal to priority equal to the priority class in the request from the second terminal). (See Robinson , col.5, line 65 to col.6, line 2). **Robinson et al.** does not disclose the capacity allocated by the first terminal to priority classes lower than the priority class parameter in the request from the second terminal.

Szabo discloses the base station can provide smaller transmission capacity (lower priority class) than the requested capacity (requested priority class), given a minimum quality is specified (priority class lower than the priority class parameter in the request from the second terminal). See col.9, lines 20-25.

Therefore, it would have been obvious to one of ordinary skills in the art to modify the **Robinson et al.** by adding the features of allocating smaller/corresponding capacities of **Szabo** into the **Robinson** so that the first terminal can allocate its capacity to the second terminal below the requested maximum capacity limit, with a minimum capacity given; or equal to the requested maximum capacity. The reason is that, in the **Robison et al.** , the master device 44 maximises its information transfer (capacity) to the slave device 30 by setting its minimum/maximum limits to correspond to a maximum information capacity requested by the slave device (requested capacity). (See Robinson , col.5, line 65 to col.6, line 2). The motivation of the combination is to fluctuate transmission rates (capacity) allocation to the second terminal in different demands; and to maintain quality of service of the transmission capacity in an acceptable range.

In claim 4, **Robinson et al.** does not disclose if the first terminal does not have sufficient capacity available, then the first terminal transmits to the second terminal a data message indicating rejecting the request. **Szabo** discloses a remote station (a second terminal) sends a request for a desired capacity to a base station (a first terminal). If the desired capacity requested by the remote station (second terminal) is not available, the base station (the first terminal) signals to the remote station (the second terminal) that the requested capacity is not available. (the first terminal transmits to the second terminal a data message rejecting the request). See col.9, lines 15-20. Therefore, it would have been obvious to one of ordinary skills in the art to modify the **Robinson et al.** by adapting the responding to the request performed by **Szabo** so as to transmit a rejected message to the second terminal when the first terminal does not have sufficient capacity. The reason is that the **Sazabo** refers to a radio communication between a subscriber terminal (a slave terminal) and a base station (a master terminal), wherein the base station receives a request to adjust its capacity in accordance with the changes in capacity requested by the subscriber terminal. (see Szabo at col.8, lines 27-40). The motivation for the modification is to help the first terminal continuously determine the transmission capacity needed by the second terminal so as to allocate enough bandwidth for the second terminal. In the mean while, the transmission quality of service can improve and delay is avoid .

Allowable Subject Matter

Claims 5 and 11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

In claim 5, , the prior art does not disclose creating a first digital representation of the first terminal 's capacity allocation in a first domain; creating a second digital representation of the second terminal 's capacity allocation in a second domain; and comparing the first and the second digital representations to determine acceptable capacity blocks.

In claim 11, the prior art does not disclose digital representations of first terminal 's capacity allocation and second terminal 's capacity allocation comprise binary "1" which represents a free time slot ; and the processor performs a bit-wise binary AND function on the first array and the second array to determine mutually acceptable capacity blocks.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Toh (US pat. No. 5,987,011) discloses Routing Method for Ad-Hoc Mobile Networks.

Haas (US Pat. No. 6,304,556 B1) discloses Routing and Mobility management Protocols for Ad-Hoc Networks.

Kumar et al. (US Pat. No. 6418148 B1) discloses Burst-Level Resource Allocation in cellular Systems.

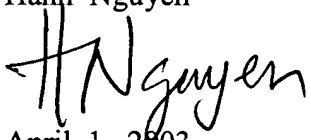
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hanh Nguyen whose telephone number is 703 306-5445. The examiner can normally be reached on Monday-Friday 8:00 AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on 703 306-4744. The fax phone numbers for the organization where this application or proceeding is assigned are 703 305-3988 for regular communications and 703 308-9051 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 305-4700.

Fax number : 703 872-9314

Hanh Nguyen



April 1, 2003